

ABSTRACT. A multi-stage collector of the type used to collect particles from industrial gas. The collector can contain multiple narrow and wide zones formed by a plurality of parallel corrugated plates. Contained in the narrow zones can be elongated electrodes with sharp leading and/or trailing edges. These electrodes can provide a non-uniform electric field near their sharp edges leading to corona discharge. The corona discharge causes particulate matter in the gas flow to become charged. The region in narrow zones away from the sharp edges of the electrodes resembles a parallel plate capacitor with relatively uniform electric field. In this region, particles can be collected on the plates and on the electrode. Wide regions can contain barrier filters (bag filters) with conductive surfaces. The collector can also be used to clean inlet gas in gasification plants and to collect re-usable materials from a gas stream.